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*On the Craniotomy Forceps of Dr. Davis, in Reply to Mr. Rawlins of Oxford.* By DAVID D. DAVIS, M.D. Physician to the Queen's Lying-in Hospital, to the Lying-in Charity, &c. &c.

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I BEG to acknowledge my obligations for the repeated and extended notices which have been taken of my Craniotomy Forceps in the *London Medical Repository*\*, and more especially for the honour of the favourable opinion of me, as expressed in the last number, (September,) in reference to the letter of "the venerable accoucheur" of Oxford. I am unwilling, however, that the kind apology of the EDITORS for me should remain my only shield against the effects of Mr. Rawlins' unqualified and unfounded counter pretensions.

It does not often happen that useful inventions are left unmolested by attempts of envious or interested men to disparage their merits; and among such attempts the most frequent are those, like the present, which have for their object the subversion or vitiation of the claim of an Inventor to the credit of originality. In being made the object of a public attack of this kind, I might indeed feel, that my accuser has placed me

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\* *Repository*, vol. viii. No. 43, 44, 45.

in the society of some of the greatest benefactors to mankind: but I do not suppose that any privilege which might be presumed to attach to such a class of persons, would be considered as forming a sufficient excuse to me, for not accepting the high toned and most spirited challenge of my veteran assailant upon this occasion. I beg to state, that I have an extraordinary dislike for combats of this kind; but, I feel that I must meet this practised champion\*, for two reasons:—and indeed they are no other than the motives which usually actuate men upon such occasions; viz. first, to shew my courage—and I rather think that I feel less afraid than most persons do, who go out in defence of their wounded honour; and, secondly, to prove the rectitude of my cause; which I trust I shall be able to establish incontrovertibly upon the basis of truth and candour. I beg however to declare, that I do not mean to charge more than once; the occasion in my opinion not requiring a waste of ammunition. On the other hand, I do not intend to fire in the air; and, if my antagonist should be left dead, or dangerously wounded, on the ground, it will be the obvious consequence of his own presumption, as indeed, is common in such cases; and I shall not affect to feel any compunctious qualms of conscience upon the subject.

Εἶκε γίρον, προθύρον, μὴ δὴ τάχα καὶ ποδὸς ἔλκη.

“So they hanged Haman on the gallows that he had prepared for Mordecai.”

The operation of craniotomy is required to be performed when the foetal head is too large to be expelled through the natural passages by the parturient efforts of the uterus; or when, in the absence of such efforts, delivery cannot be effected by any other means compatible with the security of the mother's life. In its application to the dead foetus, and perhaps in some other circumstances of extreme difficulty, this mode of delivery, in common with general embryotomy, was unquestionably known to the ancients†. But we are indebted to times comparatively modern, and chiefly to the obstetric practitioners of this country for the developement of those rational and fixed principles, founded equally on an enlarged humanity and on accurate knowledge of the subject, which are now received as constituting its moral sanctions and professional obligations. Craniotomy, as the term imports, is simply the operation by which an aperture is made into the cranium. Its intention is to reduce the bulk of the foetal head by the consequent escape or removal

\* See Rawlins' *Dissertation*—versus Dr. Osborne, p. 11, et sequent.

† Hipp. Op. Cura. Fœsii. tom. i. p. 618. Phil. apud Ætium. tom. iv. serm. 4, cap. 23.

either of a part or of the whole of its contents. In some cases, this aperture, made sufficiently large to admit of the spontaneous discharge of a considerable quantity of brain, is all that is necessary to be done, in order to ensure a speedy and a prosperous delivery; which, indeed, is then effected by the unassisted efforts of the uterus. In many others, however, in order to accomplish our purpose, we are obliged to apply more or less force of extraction, either as a substitute for the exhausted action of the womb, or as an auxiliary to that power when it might be imprudent to entrust the result to its doubtful or protracted efforts. It may therefore be asserted that in all more difficult cases of labour of this class, the application of extracting force to finish the delivery is an essential counterpart to the operation of craniotomy. For affording the assistance here presumed necessary, a great variety of instruments have been devised and recommended. In order, however, to enable such of your readers, as may not be familiar with subjects of this kind, to appreciate the precise amount of merit actually due to recent inventors, it may be upon the whole useful, if not quite necessary, to take a cursory and compressed view of the inventions of former times, which they pretend to have improved upon, or superseded.

The instruments hitherto proposed or recommended for extracting the dead fœtus, or for completing the delivery when the head has been already opened, are reducible into three kinds or classes, which, to avoid tediousness, it will be convenient to consider collectively. We have them therefore all included under the genera—1st. of hooks—2nd. of extractors upon the principle of the tire-tête of Mauriceau; (those of Amiand Waldgrave<sup>a</sup> and Levret<sup>b</sup> not belonging to our subject)—and, 3rd. of forceps.

The use of instruments of both the first and last genera is probably coeval with the practice of instrumental midwifery itself. Let us first consider the claims of the former. Instruments of the hook class have been distinctly recommended by Hippocrates<sup>c</sup>, by Celsus<sup>d</sup>, and by Ætius<sup>e</sup>. Hippocrates states the necessity in some instances of making use of two instruments of this kind, the one to antagonize the other; thus clearly anticipating the double crotchets of modern times. Albucasis<sup>f</sup>, the last of the Arabian writers, gives figures of the

<sup>a</sup> Vide Joan. Carol. Voigt. *Dissert. Chirurg.* Haller *Disputat. Chirurg.* tom. iii. p. 472.

<sup>b</sup> Levret sur l'Art. des Accouchemens.

<sup>c</sup> Hippocrat. loc. citat.

<sup>d</sup> Cels. Op. l. vii. cap. 29.

<sup>e</sup> Ætii Op. loc. citat.

<sup>f</sup> Spacch. Gynæc in Albucasi, cap. lxxvii. p. 146.

obstetric instruments known and used in his time, and amongst them we have two specimens of hooks. Ambrose Paré<sup>a</sup>, the father of modern surgery, gives figures of instruments of the same kind. Gregoire<sup>b</sup>, Peü, Maynard, and almost all the authors who have written upon the subject during the last and preceding centuries, might be added to the list of improvers or approvers of instruments of this class. But, notwithstanding the high antiquity and almost universal adoption of embryuleia and its instruments under various modifications, I have always felt the strongest objection to their use, as being unsafe in certain circumstances in the most cautious hands, and as being extremely dangerous in those of rash, awkward, or inexperienced practitioners. The blunt-hook, which I believe is a modern invention, if used carefully and properly, may indeed be admitted as an exception to this remark: but its powers are very limited, especially in head presentations requiring the operation of craniotomy; not to add, that this less dangerous form of embryuleia has been attended in many instances with deplorable consequences.

Under the second genus of embryotomy extractors to which I have referred, we may enumerate at least four varieties: viz. the tire-tête of Mauriceau<sup>c</sup>; the extracting wings appended by Burton to Ould's terebra occulta<sup>d</sup>; M. Donavia's simple contrivance of a little wooden cylinder and riband, as given to the public by Baudelocque<sup>e</sup>; and a modification of the same contrivance in a more operose form in the lately introduced extractor of Professor Assalini<sup>f</sup>.<sup>\*</sup> The common and characteristic principle of all these instruments is, that they are exclusively applied to the interior surface of the foetal skull transversely across the aperture through which they have been introduced. To the part of the mechanism so applied there is attached at right angles a handle, made of some accessible or convenient material, by which the operator is instructed to draw down in the direction of the axis of the pelvis. To this class of instruments there are also substantial objections, affecting equally their power and their safety, and affording, unquestionably, a very ample and sufficient apology for the attempt to supply the profession with better.

<sup>a</sup> *Les Œuvres d'Ambroise Paré*, edit. a Lyon, 1641, Fol. p. 608-9.

<sup>b</sup> *Voigt. loc. citat.*

<sup>c</sup> *Traité des Maladies des Femmes Grosses*, tom. i. liv. 2. p. 367.

<sup>d</sup> *Burton's Midwifery*, p. 230. plate 16.

<sup>e</sup> *Baudelocque's System of Midwifery*, Heath's Translation, vol. iii. p. 167.

<sup>f</sup> *Trans. Society of Arts for 1816.*

<sup>\*</sup> Which is only an Improvement on an Instrument of Wallace Johnson's.



But I must hasten to the consideration of our third and last genus of embryotomy extractors: viz., the genus forceps, in which are merged the claims of Mr. Rawlins and other modern inventors. The use of instruments having the forceps form of purchase is most assuredly no modern invention, and much less a novelty of recent date. To illustrate this remark, however, and to enable the reader to distinguish intelligently between facts and pretensions, I shall take the liberty once more of subdividing this genus, which is a numerous one, into two or three species or varieties.

Under the first subdivision, I shall place the species compressing or crushing forceps. It appears probable, perhaps not absolutely certain, that Hippocrates alludes to instruments of this kind when he advises the head to be seized τῷ ὤλερῳ<sup>a</sup>. I am disposed to believe, that the misdachs of Albucasis, and more especially the larger forceps, were also, at least in part, intended to diminish the bulk of the foetal head by the effect of compression. I am aware of Smellie's opinion on this subject<sup>b</sup>; but I cannot reconcile it to the barbarous appearance of the instruments themselves, as exhibited in the figures given of them by Spachius<sup>c</sup>. As to another instrument of the same author, the forfex dentatus, of which we have also an engraving in Spachius, it is expressly told, that it was to be used for the purpose of breaking down or crushing the head of the foetus<sup>d</sup>. This same power appears to have been possessed by the pieds de griffons of Ambrose Paré<sup>e</sup>, which was, however, more particularly intended by its inventor for the envelopement and extraction of the child's head when separated from its trunk and left in utero. I need not add, that compressing forceps might be, and it is probable generally were, used for the additional object of extraction.

Again. Embryotomy forceps admit of another and very important subdivision; founded upon the different modes in which the opposite parts or halves of the instrument are connected together or adjusted for their common object of extraction. The different claws of Ambrose Paré's pieds de griffons are fastened together and impelled to act by an apparatus similar to that of the once celebrated specula matricis. The structure of Fried's forceps<sup>f</sup> partakes considerably of the same sort of contrivance. All other instruments properly

<sup>a</sup> *Hip. Loc. Citat.*—See also his Commentator, M. C. Rhemus. *Comment. vi. Spacch. Gynæc.* p. 683.

<sup>b</sup> Smellie's *Preface*.

<sup>c</sup> Albucasis *apud* Spacchium, p. 446.

<sup>d</sup> *Idem*, p. 447.

<sup>e</sup> Ambr. Par. p. 608. *et sequent.*

<sup>f</sup> Voigt. *de Cap. Infant. Abrupt.* § xl. p. 469.

denominated craniotomy forceps that I have ever seen or heard of are connected together by some sort of joint, situated in or about the centre of the instrument, and common to each half of it. But this connection may be effected either by a rivet joint which is only moveable on its own axis, or by some other mode of junction admitting of the separation at pleasure of the two blades. It is probable that all the instruments of this kind known to the antients were fastened together upon the principle of our rivet joint. Here also are to be classed all the forceps of this tribe best known in modern times. viz. those of Puisseau, Schurer\*, Lyon, and the lithotomy forceps of La Motte†. Of these, the power is nearly equal; all of them, with the exception of La Motte's, being armed with long transfixing teeth. The instrument of Dr. Lyon's (formerly of Edinburgh) is best known in this country. To the instrument makers here it is better known under the designation of Haighton's tooth-forceps; because, I apprehend, that Dr. Haighton is in the habit of recommending it in his estimable lectures upon midwifery. In common with those of Puisseau and Schurer, it is really a very useful and convenient instrument, and, like them, well adapted for the extraction of the fœtus in cases of moderate confinement or distortion. But it unfortunately happens, that a great majority of difficulties of this kind depend upon want of sufficient space at the superior aperture of the pelvis, where the application of rivet-jointed forceps might be attended with much difficulty and inconvenience, and where generally, and in all cases of great confinement, the purchase would of necessity be too limited to admit of a sufficiently powerful exertion of extracting force. This remark, I am very certain, is perfectly intelligible to such of my readers as are practically acquainted with the difficulties to which it refers. For want of power to introduce the blades singly, so as to enable the operator to command an ample purchase above the confinement or distortion occasioning the arrest, the profession was still under the necessity, in the more difficult cases of embryotomy, to have recourse to its blunt-hooks and crotchets. But such a power has for many years been accessible to it; perhaps, like some objects of sensation, too near the organ to excite a distinct impression; it having been presented to us in a great variety of forms in those instruments which are most familiar to us: viz. the modern obstetric forceps for extracting the living child. But the merit, as in this instance, of transferring the application

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\* *Disput. Chirurg. loc. citat.*

† La Motte. *Obs.* pp. 247, 250, 403, 404.

of a principle from one piece of mechanism to another is not to be undervalued on account of its obviousness or simplicity ; and it must attach, however much or little it may be, to the person who was first to make the transfer.

Now, unfortunately for the claims of Mr. Rawlins, I have it in my power to prove, that the merit of it, so confidently arrogated by him, does not in fact belong to him ; or, in other words, that " he was " *not* " the real first inventor of," what he, I think rather improperly, calls " the reflected forceps."

About two years ago, I communicated to my instrument-maker, Mr. Ewing of Drury Lane, an idea for the construction of a craniotomy extractor, capable of being applied by opposite and moveable surfaces to opposite surfaces of the fetal skull, upon the principle of two parallel blades adapted to one common handle. But this is not necessarily a part of our present subject. Some time afterwards, with the view of adding to my collection of lecture or shew instruments, I sought the opportunity of seeing those of some of my friends ; and among the antiquated curiosities of that kind belonging to my friend and colleague, Mr. Charles Clarke, I found a rusty, clumsy, complicated-looking, old instrument, having essentially the character of forceps with parallel blades and a moveable joint. The joint was an imperfect specimen of Giffard's, rendered heavy and inconvenient by an auxiliary screw apparatus. The convex surface of the internal blade was armed with long teeth, which, upon being separated from its antagonist external blade, came to be fully exposed. The handle of the internal blade was produced into an inconvenient blunt-hook, and the appearance of the instrument altogether was such as to excite feelings not very uncongenial with those which might be expected to accompany its use. I, however, recognized in its properties, provided its obvious and capital faults could be remedied, the substratum of an useful instrument, superior, indeed, both as to power and principle, to my own extractor. It possessed the property distinctive of our second subdivision : viz. that of forceps parallel at the blades and separable at a common and moveable joint. Now it appears to me probable, that this was the first instrument of the kind that was ever made. I regret that I have not been able to trace its history. I have, however, the authority of Mr. Clarke for stating, that it has been in his collection ever since he can remember, and certainly prior to the date of Mr. Rawlins' publication. It is distinguished from all preceding instruments having parallel blades, by its adoption of Giffard's joint. This new application of the loose joint constituted, indeed, its only novelty ; the teeth, the parallelism, and the curve to answer to the curve of the sacrum, being known



before, and applied with considerable effect in the forceps of Schurer. But be it remembered, however, that in consequence of this one step in improvement upon its predecessors, it became, to all intents and purposes, an example of a pair of forceps upon the principle of those which Mr. Rawlins has since designated the reflected-forceps.

This analysis, while it exhibits in a striking point of view the tardy progress of improvement and the doubtful value of each presumed advantage gained in this department of our art, is manifestly subversive of the pretensions and fatal to the claims of the Oxford accoucheur.

But, it may be asked, whether, having thus so completely defeated my competitor, I have not at the same time been committing an act of *felo de se* upon myself? If I had been the sort of person that Mr. Rawlins took me for, or rather wished to represent me: if I had borrowed the principle of Mr. Clarke's instrument, a principle, however, well known as applied to the common obstetric forceps, without reference to the source whence it was more immediately taken; there might, indeed, be some ground for such a suspicion. But what is the fact? I have reason to believe, that Mr. Rawlins was informed by Mr. Aikin, the secretary to the Society of Arts, some time *before* the publication of his letter in the *Repository*, that several instruments, shewing the nature and progress of my improvement, were exhibited by me to the committee of mechanics of the said society, before they came to the adjudication of a premium for my specific improvement upon them. Among the instruments so exhibited, was one made upon the model of Mr. Clarke's, the first constructed specimen, as I conceive, of a pair of forceps, having parallel blades and a moveable joint, and very superior, notwithstanding its faults, to the more modern forceps of Mr. Rawlins. This fact, I apprehend, will be considered a sufficient protection to my character against the imputation of dishonour, attempted to be attached to it by that gentleman. I did not, indeed, make a similar presentment of the reflected-forceps, for a reason which I trust will be deemed perfectly satisfactory: viz. that I had never seen nor heard of them. I certainly knew that Mr. Rawlins had written a tract upon the properties of the obstetric forceps, having seen his name in medical catalogues as the author of a dissertation on that subject. I have now to regret that I had not been induced to read it; and I would observe, that from the improper use of the partitive article in the running title of the dissertation, I was not likely to look into it for information upon the subject of embryotomy. Medical authors are so numerous and the productions of the majority of them are so worthless, that I am under the necessity of being very



select in my choice of books for my own reading. Moreover, it may be somewhat habitual with me to be rather shy with strangers, more especially if they have not the good luck to be pretty well recommended to me. In the case of Mr. Rawlins' dissertation, I was unfortunately supplied with a motive for the full exercise of my constitutional reserve. In a copy of manuscript lectures upon midwifery, which were delivered nearly twenty years ago by a teacher and practitioner of his art of the first eminence, I had read the following passage: "Since the invention of these," (Johnson's forceps), "Mr. Rawlins of Oxford has written a philippic against the double-curved forceps, and recommended straight ones of his own invention, but which in reality were made and used eighty years ago." For the authenticity of this passage, I beg to refer to Mr. Overend, an ingenious surgeon and a very experienced practitioner in midwifery at Sheffield, to whose kindness I am indebted for the present use of it. I here quote it as an apology to Mr. Rawlins for my seeming neglect of his essay. As a further excuse, perhaps not a very valid one, I would beg to state, that in having omitted to acquaint myself with the contents of Mr. Rawlins' tract, I have sinned in very respectable company; all my obstetric friends whom I have spoken to upon the subject having been equally guilty. I am, indeed, disposed to believe, that there may not be a single pair, or but a single pair, of the reflected-forceps to be met with in the whole town.

As to Dr. Mulder's pleasant compliments to our author, more gratifying, it would appear, from having been presented to him in barbarous Latin, they are so carefully expressed and so provokingly qualified, that, in my opinion, they have a very similar power to that of the negative quantities in Algebra\*. I should also observe, that, had the approbation of this book-making foreigner been really worth boasting of, it ought to have had reference to the subject under consideration; whereas, on the contrary, he does not say a single word either as to the use or merits of the reflected forceps. But why has this invention of Mr. Rawlins been treated with so much neglect? Either the glimmer of the new light was so feeble as not to be seen, or the refulgence of the meteor was so glaring, and its transit so sudden and rapid, as to have paralysed the faculties of those whom it came to benefit!

This leads me to solicit attention to the properties which are peculiar to my craniotomy forceps, which have already procured for them the honour of the distinction alluded to in Mr.

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\* Vide *Hist. Lit. et Critic.* Auct. Johan. Mulder, p. 162.

Rawlins' letter, and which, I am satisfied, will have the effect ultimately of ensuring for them a place amongst the obstetric instruments of all intelligent practitioners in the kingdom. It has been already remarked that craniotomy forceps, having fast joints, have generally been armed with sharp transfixing teeth. In the first effort of improvement upon them, as in the case of the instrument in Mr. Clarke's collection, it was natural to retain the method of purchase at the grasping surfaces previously known, without immediately considering how far it might be convenient or safe to adopt it in forceps having a moveable joint: or it might be retained, partly from want of thought to anticipate objections to it, and partly from want of ability to provide a safer substitute—the ingenuity of the inventor having possibly been already exhausted. Without, however, thinking it necessary to settle this point, I would assume it as a fact, that any instrument having a given number of long and sharply-pointed teeth, projecting at right angles and without protection from one of its surfaces, could not be introduced into the vagina, carried up four or five inches above the external orifice, as in some cases might be required, and then withdrawn or adjusted at pleasure, without the risk of doing mischief. Such was the instrument in Mr. Clarke's collection, which he, and probably all his predecessors in the same school, had been in the habit of exhibiting to their pupils, as a piece of ingenious but cruel curiosity, for the last thirty or forty years. I consider the peculiar structure of its grasping surfaces, now adverted to, as its principal fault, and what probably had the effect for so long a period of preventing its admission into obstetric practice. In this application of Giffard's lock, the inventor failed to reconcile the safety of the old instrument with the improved power of the new. That desideratum was therefore left for future attainment. I am happy in the belief that it has been completely effected in the contrivance for protecting the teeth of the external blade peculiar to my instrument.

In the adoption of this contrivance I am not aware that I have been anticipated by any other person, nor has the principle of it been applied, as far as I know, to any other piece of mechanism that has ever existed. As to its merits, I have made no exorbitant pretensions. The simplicity of the idea was such as to require no efforts of profound thinking or elaborate combinations to arrive at it. I acknowledge, however, that it did not occur to me till after the failure of other expedients to attain the same object; and, after all, I feel that I am more indebted for the suggestion to frequently repeated demands upon my attention to the subject, than to the possession of any peculiar aptitude of mind for mechanical improvements.

Having said thus much, I may be permitted to offer it to the acceptance of my brethren, as an instrument in which the requisite properties of ample power, perfect safety, and great facility of application, are more effectually combined than in any other form of craniotomy extractor that I am acquainted with.

———“ *Si quid novisti rectius istis,  
Candidus imperti ; si non, his utere mecum.*”

As to the reflected forceps of Mr. Rawlins, which he has so artfully attempted to identify with mine, they are not worth their price, whatever that may be ; and as an improvement upon those of Schurer or Lyon, they are actually worth nothing.

“ *E meglio esser testa di Luccio che coda di Storione.*”

In very easy cases indeed, depending upon a moderate diminution only of the usual dimensions of the pelvis, where the short diameter of the superior aperture might still amount to about two inches and a half or upwards, they might possibly, with a little trouble and repetition of attempt, enable the operator to effect his object. But in many such cases the natural forceps appended to the human hand, the fingers and thumb, aided by the efforts of the uterus, and the effect of a little waiting, would generally answer every purpose. It has been my higher aim to meet the greatest difficulties of the art, compatible with the safe possibility of delivery by the natural passages. For the relief of cases of great distortion, such as was probably that to which Mr. Rawlins has made allusion in page 35 of his Dissertation, I take upon me to assert, that the reflected forceps are not possessed of sufficient power. I ground my assertion—1st, upon my general knowledge of difficulties of this kind ; and I would here observe that my official engagements are such as to afford me more opportunities of seeing cases of this description in one or two years, than it is probable he can have had during the whole of his long and active professional life\* : and, 2dly, upon the fact, that, during my progressive improvement of my own forceps, the use of much better and more powerful instruments than Mr. Rawlins' repeatedly disappointed my hopes. Without disparagement to the one, or the concession of much merit to the other, it may be freely admitted, that the Oxonian instrument may have some properties in common with mine. The same thing may indeed be said of the blacksmith's pincers, mentioned by Burton. They have, it is true, two handles in common : so had those of Hippocrates. They have two blades in common : so had

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\* See p. 81 and 82 of the Dissertation, where the author states that he has attended upward of five thousand labours.



those of Albucasis. Their blades are alike parallel and curved: so were those of Schurer. They are alike moveable at the joint: but this is a property which it has been proved belonged to an instrument of much earlier date than either. The great and incomparable superiority of my instrument to that of Mr. Rawlins' consists in the method peculiar to mine for ensuring a safe and tenacious purchase: in this consists the differential quality. A general resemblance cannot be admitted as constituting identity of character. Veri-similitude is often like truth: the moon has some properties in common with the sun; and Plato's unfeathered cock was promoted, by the definition of its master, to a very near resemblance with Plato himself. A craniotomy extractor without power, or with only a very limited degree of power, is a sort of absurdity. It does not perhaps want *the* one thing needful, but certainly *a* one thing most needful. Without this essential property it can be considered only as an imposing semblance of what it pretends to be; as essentially imperfect in its nature as a watch would be without a spring, an eye without an optic nerve, a jest without wit, or a man without a soul. Such is truly the character of the reflected forceps of Mr. Rawlins.

I have to apologise for the length of this communication. It will occupy much more space in this valuable miscellany than I had intended; but I have wished to put my readers in full possession of the facts of the case. I am not conscious of having made a single remark, or having deduced one inference not warranted by the facts advanced. I therefore do not anticipate any necessity for a renewal of the subject.

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